

## orgmode examples

draw, code evaluation and present in orgmode with  $\text{\LaTeX}$  beamer

kimim

# Outline

1. Introduction
2. Preparation
3. Drawing in code
4. Org-babel Evaluating Programming Languages
5. Presenting with Org-beamer
6. Conclusion



# Outline

1. Introduction

2. Preparation

3. Drawing in code

4. Org-babel Evaluating Programming Languages

5. Presenting with Org-beamer

6. Conclusion



# Introduction

## Purpose

To evaluate many features of orgmode, such as

- drawing with code
- evaluating results of code snippets
- exporting orgmode file to pdf slides



# Introduction

## How

Following tools are used in this file:

- [MSYS2](#) provides many tools and libraries
- [GraalVM](#) JDK supports Java, JS, R and more
- [GNU Emacs](#) with [kimim-emacs](#) configuration
- [Org Mode](#), including [org-babel](#), [org-export](#)
- [TexLive](#) with [beamertheme-kimim](#) style
- [PlantUML](#), [Graphviz](#),  $\text{\LaTeX}$  [tikz](#) package
- [Inkscape](#) to convert svg to pdf, during `orgmode-pdf` exporting



# Outline

1. Introduction

**2. Preparation**

3. Drawing in code

4. Org-babel Evaluating Programming Languages

5. Presenting with Org-beamer

6. Conclusion



# Preparation

## Emacs settings

You may need to use kimim-emacs configuration:

```
# backup existing emacs config
cd ~ && mv .emacs .emacs-backup && mv .emacs.d .emacs.d-backup
# clone this config
git clone https://github.com/kimim/kimim-emacs
# copy default .emacs to ~
cp kimim-emacs/.emacs ~
```



# Preparation

## Emacs and Orgmode version

Firstly, let's check GNU Emacs<sup>1</sup> and Orgmode<sup>2</sup> version:

```
(concat (emacs-version)
        "\nOrgmode " (org-version))
```

```
GNU Emacs 28.0.50 (build 6, x86_64-w64-mingw32)
  of 2021-08-31
Orgmode 9.4.4
```

---

<sup>1</sup><https://www.gnu.org/software/emacs>

<sup>2</sup><https://orgmode.org>





# Preparation

## TexLive and Beamer Theme

Install TexLive<sup>3</sup> to <texlive-path> and clone beamertheme-kimim<sup>4</sup>, and update T<sub>E</sub>X cache:

```
git clone https://github.com/kimim/beamertheme-kimim \  
    <texlive-path>/texmf-local/tex/latex/beamertheme-kimim  
mktexlsr
```

---

<sup>3</sup><http://tug.org/texlive>

<sup>4</sup><https://github.com/kimim/beamertheme-kimim>



# Preparation

## Inkscape version

Install Inkscape<sup>5</sup> to convert SVG image to PDF.  
This is inkscape version on my Windows 10:

```
inkscape --version
```

Inkscape 1.0.2-2 (e86c870879, 2021-01-15)

---

<sup>5</sup><https://inkscape.org>



# Outline

1. Introduction
2. Preparation
- 3. Drawing in code**
4. Org-babel Evaluating Programming Languages
5. Presenting with Org-beamer
6. Conclusion



# Drawing in code

## PlantUML settings in Emacs

Download plantuml.jar<sup>6</sup>, and set jar-path

```
(require 'url-handlers)
(require 'ob-plantuml)
(url-copy-file "https://nchc.dl.sourceforge.net/project/plantuml/plantuml.jar"
              "./plantuml.jar" t)
(setq org-plantuml-jar-path "./plantuml.jar")
```

---

<sup>6</sup><https://plantuml.com>



# Drawing in code

## PlantUML version

Here is the version info on my machine, including JVM, dot and graphviz:

```
(shell-command-to-string  
  (concat  
    "java -jar " org-plantuml-jar-path " -version"))
```

PlantUML version 1.2021.8 (Sat Jun 26 16:20:59 CST 2021)

(GPL source distribution)

Java Runtime: OpenJDK Runtime Environment

JVM: OpenJDK 64-Bit Server VM

Default Encoding: Cp1252

Language: en

Country: US

PLANTUML\_LIMIT\_SIZE: 4096

Dot version: dot - graphviz version 2.44.1 (20200629.0846)

Installation seems OK. File generation OK

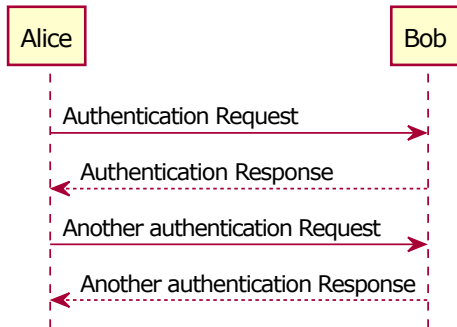


# Drawing in code

## Sequence Diagram

Let's draw a simple sequence diagram with this plantuml code:

```
@startuml
hide footbox
hide unlinked
Alice -> Bob: Authentication Request
Bob --> Alice: Authentication Response
Alice -> Bob: Another authentication Request
Alice <-- Bob: Another authentication Response
@enduml
```

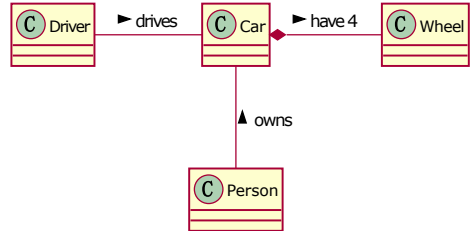


# Drawing in code

## Class Diagram

### A simple class diagram

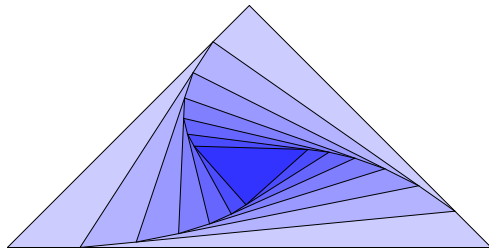
```
@startuml
class Car
Driver - Car : drives >
Car *- Wheel : have 4 >
Car -- Person : < owns
@enduml
```



# Drawing in code

tikz diagram

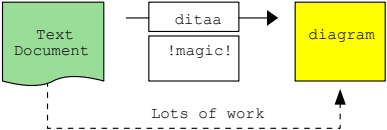
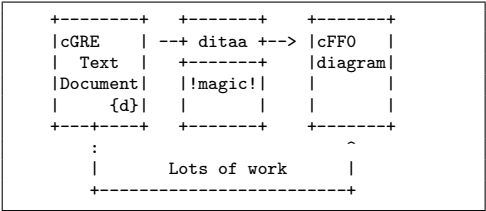
```
\begin{tikzpicture}
  \coordinate (A) at (0,0);
  \coordinate (B) at (60, 0);
  \coordinate (C) at (30, 30);
  \foreach \density in {20,30,...,80}{%
    \draw[fill=blue!\density]
      (A)--(B)--(C)--cycle;
    \path
      (A) coordinate (X)
      -- (B) coordinate[pos=.15] (A)
      -- (C) coordinate[pos=.15] (B)
      -- (X) coordinate[pos=.15] (C);
  }
\end{tikzpicture}
```





# Drawing in code

ditaa



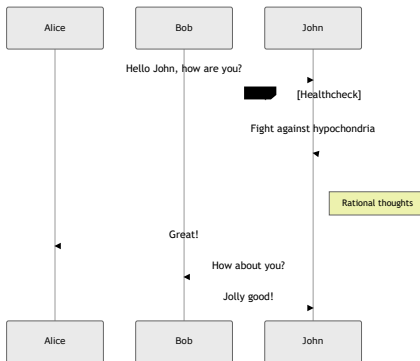
# Drawing in code

## mermaid

Installation and Configuration, see

[kimim-emacs#mermaid](#)

```
sequenceDiagram
    participant Alice
    participant Bob
    Alice->>John: Hello John, how are you?
    loop Healthcheck
        John->>John: Fight against hypochondria
    end
    Note right of John: Rational thoughts
    John-->>Alice: Great!
    John->>Bob: How about you?
    Bob-->>John: Jolly good!
```



# Outline

1. Introduction
2. Preparation
3. Drawing in code
- 4. Org-babel Evaluating Programming Languages**
5. Presenting with Org-beamer
6. Conclusion



# Org-babel Evaluating Programming Languages

emacs lisp

```
(emacs-version)
```

```
GNU Emacs 28.0.50 (build 6, x86_64-w64-mingw32)  
of 2021-08-31
```

```
(decoded-time-year (decode-time (current-time)))
```

```
2021
```



# Org-babel Evaluating Programming Languages

shell

```
sh --version
```

```
GNU bash, version 5.1.8(1)-release (x86_64-pc-msys)
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
```

```
This is free software; you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
```



# Org-babel Evaluating Programming Languages

C

```
printf("%s is %d years old\n", "C programming language", year-1972);
```

C programming language is 49 years old



# Org-babel Evaluating Programming Languages

C++

```
cout << "C++ is " << year-1979 << " years old" << endl;
```

C++ is 42 years old



# Org-babel Evaluating Programming Languages

## Clojure

```
(println "Clojure is" (- year 2005) "years old")
```

Clojure is 16 years old





# Org-babel Evaluating Programming Languages

ClojureScript

TODO

```
(println "ClojureScript is" (- 2021 2011) "years old")
```



# Org-babel Evaluating Programming Languages

## Java

TODO: can pass variable to java

```
public class Main{  
    public static void main(String[] args){  
        System.out.println("Java is " + (2021-1995) + " years old");  
        return;  
    }  
}
```

Java is 26 years old



# Org-babel Evaluating Programming Languages

## Python

Check Python version in shell:

```
python --version
```

Python 3.9.6

Evaluate Python code:

```
print("Python is " + str(year - 1991) + " years old")
```

Python is 30 years old



# Org-babel Evaluating Programming Languages

## Rust

```
(package-install 'ob-rust)
```

TODO: cannot pass variable to rust

```
fn main() {  
    println!("Rust is {} years old", 2021 - 2016);  
}
```

Rust is 5 years old



# Org-babel Evaluating Programming Languages

Go

TODO

```
package main
import ("fmt")

func main(){
    fmt.Println("emacs")
}
```



# Org-babel Evaluating Programming Languages

R

TODO



# Outline

1. Introduction
2. Preparation
3. Drawing in code
4. Org-babel Evaluating Programming Languages
- 5. Presenting with Org-beamer**
6. Conclusion



# Presenting with Org-beamer

## Beamer

In this section, I will try some beamer settings in orgmode.





# Presenting with Org-beamer

## latexmk version

```
(princ (concat (format "LaTeXmk version: %s\n"  
                      (eshell-command-result "latexmk --version") "\n")  
              (format "XeTeX version: %s\n"  
                      (eshell-command-result "xelatex --version") "\n"))))
```

LaTeXmk version: Latexmk, John Collins, 29 May 2021. Version 4.74b  
XeTeX version: XeTeX 3.141592653-2.6-0.999993 (TeX Live 2021/W32TeX)  
kpathsea version 6.3.3  
Copyright 2021 SIL International, Jonathan Kew and Khaled Hosny.  
There is NO warranty. Redistribution of this software is  
covered by the terms of both the XeTeX copyright and  
the Lesser GNU General Public License.  
For more information about these matters, see the file  
named COPYING and the XeTeX source.  
Primary author of XeTeX: Jonathan Kew.  
Compiled with ICU version 68.2; using 68.2  
Compiled with zlib version 1.2.11; using 1.2.11  
Compiled with FreeType2 version 2.10.4; using 2.10.4  
Compiled with Graphite2 version 1.3.14; using 1.3.14  
Compiled with HarfBuzz version 2.7.4; using 2.7.4  
Compiled with libpng version 1.6.37; using 1.6.37  
Compiled with pplib version v2.05 less toxic i hope  
Compiled with fontconfig version 2.13.93; using 2.13.93



# Presenting with Org-beamer

simple slide

This is a simple slide, with some formatted texts:

- **important** underline *slashed* code verbatim ~~deleted~~ alert
  - **important** underline *slashed* code verbatim ~~deleted~~ alert
  - **important** underline *slashed* code verbatim ~~deleted~~ alert
    - **important** underline *slashed* code verbatim ~~deleted~~ alert
    - **important** underline *slashed* code verbatim ~~deleted~~ alert
    - **important** underline *slashed* code verbatim ~~deleted~~ alert

Enumerations:

1. **important** underline *slashed* code verbatim ~~deleted~~ alert
  - 1.1 **important** underline *slashed* code verbatim ~~deleted~~ alert
  - 1.2 **important** underline *slashed* code verbatim ~~deleted~~ alert
    - 1.2.1 **important** underline *slashed* code verbatim ~~deleted~~ alert
    - 1.2.2 **important** underline *slashed* code verbatim ~~deleted~~ alert
    - 1.2.3 **important** underline *slashed* code verbatim ~~deleted~~ alert



# Presenting with Org-beamer

simple slide with definition

It is not recommended to have second level definition bullet...

**Beamer**  $\text{\LaTeX}$  package to generate slides

**Orgmode** Powerful plain text format

**org-babel** Let Orgmode understand and evaluate programming languages

**ox-latex** Exporter to export orgmode to latex and further to PDF



# Outline

1. Introduction
2. Preparation
3. Drawing in code
4. Org-babel Evaluating Programming Languages
5. Presenting with Org-beamer
- 6. Conclusion**

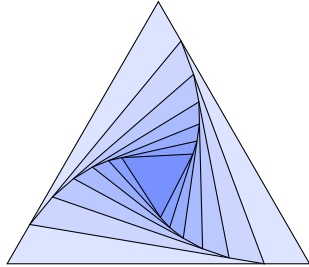


# Conclusion

## Key Takeaways

- Emacs is a long lasting, and wonderful text editor
- Orgmode is an awesome plain text format
- $\text{\LaTeX}$  and Beamer is great typesetting tool
- Thus, drawing plantuml diagram with these tools is cool!





# Appendix

## References I

